REMARKS

Applicants have studied the non-final *Office Action* mailed September 25, 2006, and have made amendments to the claims. It is respectfully submitted that the application, as amended, is in condition for allowance. No new matter has been added.

The Examiner's objections and rejections are addressed below in substantially the same order as in the non-final *Office Action* mailed September 25, 2006. Applicants respectfully request reconsideration and allowance of the claims in view of the above amendments and the following remarks.

REJECTIONS UNDER 35 USC §101

Claims 1-13 are rejected under **35 U.S.C. §101** as directed to non-statutory subject matter, apparently since "[t]hese claim to be an improper definition of a process." *Office Action* mailed September 25, 2006 at page 2. Reference is also made to **§2173.05(q)** of the ***M.P.E.P.*** A more specific rejection of any of claims 1-13 under **35 U.S.C. §101**, as required, does not appear to have been given. These rejections are traversed.

Response

Applicants respectfully note that the claims were amended in the *Preliminary Amendment* filed January 19, 2005 to eliminate the recitation of "use of" in the claims. The Title of the Invention was also amended, accordingly. Nevertheless, in the interests of expediting prosecution in the present application, Applicants submit amendments and new claims which properly define the process and are believed to overcome the rejection.

For the foregoing reasons, Applicants respectfully request the Examiner to withdraw these rejections under **35 U.S.C. §101**.

REJECTIONS UNDER 35 USC §112, ¶2

Claims 1-13 were rejected under **35 U.S.C. §112, ¶2** as indefinite. The examiner contends that it is unclear "what structure would necessarily make up a 'blue flame' burner." *Office Action* mailed September 25, 2006 at page 2.

Claims 1-13 also were rejected under **35 U.S.C. §112, ¶2** as indefinite due to the recitation of "a use without any active, positive steps delimiting how this use is actually practiced." *Office Action* mailed September 25, 2006 at page 3.

A more specific rejection of any of claims 1-13 under **35 U.S.C. §112, ¶2**, as required, does not appear to have been given. These rejections are traversed.

Response

Claims 1-13 have been amended and new claims 14-22 have been added.

-"Blue Flame Burner"

The primary purpose of the requirement for claim definiteness is "to ensure that the scope of the claims is clear so the public is informed of the boundaries of what constitutes infringement of the patent. A secondary purpose is to provide a clear measure of what the applicants regard as the invention so that it can be determined whether the claimed invention meets all the criteria for patentability and whether the specification meets the criteria of 35 U.S.C. § 112, first paragraph with respect to the claimed invention." MPEP 2173.

The examiner's focus during examination of the claims for compliance with the requirement of definiteness under 35 U.S.C. § 112, second paragraph, is whether the claim meets the threshold requirements of clarity and precision, not whether more suitable language or modes of expression are available. MPEP 2173.02. "When the examiner is satisfied that patentable subject matter is disclosed, and it is apparent to the examiner that the claims are directed to such patentable subject matter, he or she should allow claims which define the patentable subject matter with a reasonable degree of particularity and distinctness." *Id.*, emphasis in original.

In assessing the definiteness of claim language, the claims are not to be read in a vacuum, but must be read in light of

(A) The content of the particular application disclosure;

(B) The teachings of the prior art; and,

(C) The claim interpretation that would be given by one possessing the ordinary level of skill in the pertinent art at the time the invention was made.

See MPEP 2173.02.

The specification contains a description of what is meant by the phrase "blue flame burner." Applicants refer the examiner to paragraph [004] of the published application, US 2005/0255416. Also of interest is U.S. Patent No. 3,545,902, referenced in paragraph [004] of US 2005/0255416. U.S. Patent No. 3,545,902 has been being submitted in an Information

Disclosure Statement in this case. When interpreted in light of the description in the specification and the knowledge of persons of ordinary skill in the art, the phrase "blue flame burner" is believed to meet the requirement of a reasonable degree of particularity and distinctness. In addition, claim 1 has been amended to specify that the blue flame burner is "adapted for domestic heating" and to specify that the method comprises ""performing one or more procedure selected from the group consisting of heating water with the flue gasses by indirect heat exchange in a boiler and directly heating a space with the flue gasses."

Applicants respectfully request that this rejection be withdrawn.

-Recitation of a "use" without delimiting recitations

As previously explained, the claims were amended in the *Preliminary Amendment* filed January 19, 2005 to eliminate the recitation of "use of" in the claims. The Title of the Invention was also amended, accordingly. Nevertheless, in the interests of expediting prosecution in the present application, Applicants have submitted amendments and new claims which are believed to include sufficient recitations to overcome this rejection, and to render the pending claims definite and clear.

For the foregoing reasons, Applicants respectfully request the Examiner to withdraw this rejection.

REJECTIONS UNDER 35 USC §102(B)

Claims 1, 5, 6, and 7 were rejected under **35 U.S.C. §102(b)** as anticipated by Davis et al., (US 5,378,348, "*Davis*"). These rejections are traversed.

Response

In order to establish a case of *prima facie* anticipation of a claim over *Davis*, the Examiner must establish that *Davis* discloses every limitation of that claim, either explicitly or inherently. *Atlas Powder Co. v. Ireco Inc.*, 190 F.3d 1342, 1346, 51 USPQ2d 1943, 1945 (Fed. Cir. 1999).

-Claim 1

Davis generally is directed to "the production of distillate fuels from a waxy hydrocarbon produced by the reaction of CO and hydrogen, the Fischer-Tropsch hydrocarbon synthesis process." *Davis* (at column 1, lines 9-12). More particularly, *Davis* states that "materials **useful as diesel and**

jet fuels or as blending components for diesel and jet fuels are produced from waxy Fischer-Tropsch products." *Davis* (at column 1, lines 44-46, emphasis added).

The Examiner cannot establish a case of *prima facie* anticipation of claim 1 over Davis because the examiner cannot point to a teaching in *Davis* of a method comprising "**providing [a] blue flame burner *adapted for domestic heating* with fuel comprising a Fischer-Tropsch-derived fuel,**" "burning the fuel under conditions effective to produce an amount of energy and flue gasses," and "**performing one or more procedure selected from the group consisting of heating water with the flue gasses by indirect heat exchange in a boiler and directly heating a space with the flue gasses.**" Claim 1, emphasis added. Claims 5, 6, and 7 and new claims 21 and 22 depend from claim 1, either directly or indirectly, and are allowable for the same reasons.

-New claims 14-21

The examiner cannot establish a case of *prima facie* anticipation of claims 14-21 over Davis because the examiner cannot point to a teaching or suggestion in Davis of:

Claim 14:

supplying a liquid Fischer-Tropsch-derived fuel to the blue flame burner;

supplying an oxygen-containing gas to the blue flame burner;

mixing the liquid Fischer-Tropsch-derived fuel and the oxygen-containing gas to form a combustible mixture;

and,

burning the combustible mixture utilizing the blue flame burner to produce flue gasses.

Similar arguments apply with respect to claims 16, 18, and to claims depending therefrom.

In addition, the examiner cannot point to a teaching of the following limitations of the respective claims in *Davis*:

Claim 14: "recycling at least a portion of the flue gasses externally of the blue flame burner to a nozzle of the blue flame burner recirculating the portion of the flue gasses."

Claim 16: "feeding the combustible mixture to a pre-combustion space within the blue flame burner" and "recycling at least a portion of the flue gasses to a nozzle of the blue flame burner by swirling the combustible mixture within the blue flame burner recirculating the portion of the flue gasses."

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Claim 18: "feeding the combustible mixture to a pre-combustion space within the blue flame burner" and burning such fuel "operating under conditions wherein lambda comprises a ratio of a total amount of the oxygen-containing gas available for combustion to an amount of the oxygen-containing gas required to burn substantially all of the Fischer-Tropsch-derived fuel, lambda having a value of about 1.6 or less."

Claims 15, 17, and 19: "performing one or more procedure selected from the group consisting of heating water with the flue gasses by indirect heat exchange in a boiler and directly heating a space with the flue gasses."

For at least the foregoing reasons, the Examiner has not established a case of *prima facie* anticipation of amended claim 1 or new claims 14-19. The remaining claims depend, directly or indirectly, from claim 1, 14, 16, or 18 and are allowable therewith. Applicant respectfully requests the Examiner to withdraw these rejections under **35 U.S.C. §102(b)**.

REJECTIONS UNDER 35 USC §103(A)

The examiner rejects claims 1-13 as obvious under **35 U.S.C. §103(a)** over *Suppes* et al. ("Compression-Ignition Fuel Properties of Fischer-Tropsch Syncrude," *Ind. Eng. Chem. Res.*, **37**, 2029-2038, 1998, "*Suppes*") in view of Chen et al., (US 4,764,266, "*Chen*"). The examiner contends that *Suppes* "discloses burning light Fischer-Tropsch fuels or Syncrude . . . in combustion apparatus such as internal combustion engines, as a suitable alternative to diesel and gasoline." The examiner contends that Chen describes "a process for using or burning middle distillate Fischer-Tropsch-derived fuel . . .as home heating oil." The examiner takes "Official Notice" that "it is well known to burn 'home heating oil' in combustion apparatus associated with boiler apparatus for heating homes. The combustion apparatus in these home heaters [is] known to be of the type which produc[e] blue flames." Office Action, p. 5.

These rejections are traversed.

Response

The Examiner apparently "assumed for the sake of examination" that "lambda," as recited in the claims, "refer[s] to the ratio of an oxidant to fuel necessary for combustion." Applicants respectfully disagree with this interpretation of lambda. The specification explains that the "proportion of air in excess of that required for stoichiometric combustion is known as the excess air

ratio or 'lambda', which is defined as **the ratio of total air available for combustion to that required to burn all of the fuel.**" Specification, page 3, lines 27-33 (emphasis added).

In any event, claim 1 has been amended, and the new claims include the limitations discussed in detail above. The examiner has the burden to establish a *prima facie* case of unpatentability of the pending claims on any grounds, including obviousness. *In re Oetiker*, 24 U.S.P.Q.2d 1443 (Fed. Cir. 1992). If examination at the initial stage does not produce a *prima facie* case of unpatentability, then without more, the applicant is entitled to grant of the patent. *In re Oetiker*, 24 U.S.P.Q.2d 1443. In order to establish that the new and amended claims are *prima facie* obvious over *Suppes* in view of *Chen*, the Examiner must point to two things in the cited references, and not in Applicants' disclosure: (1) the suggestion of the invention, and (2) the expectation of its success. *In re Vaeck*, 20 U.S.P.Q.2d 1438, 1442 (Fed. Cir. 1991). The examiner cannot meet this burden.

The examiner cannot point to a teaching or suggestion in Suppes of a method comprising "**providing a blue flame burner adapted for domestic heating with fuel comprising a Fischer Tropsch derived fuel**" and "**performing one or more procedure selected from the group consisting of heating water with the flue gasses by indirect heat exchange in a boiler and directly heating a space with the flue gasses.**" Claim 1. The examiner therefore cannot point to a teaching or suggestion of the **invention** of claim 1 in Suppes.

The examiner cannot establish *prima facie* obviousness merely by arguing that *Suppes* could be modified to incorporate something not taught or suggested by *Suppes*, itself, or by another cited reference. In order to establish a case of *prima facie* obviousness, the examiner has the burden to point to a teaching or suggestion in the **references themselves** that it would be desirable to make the modification(s) required to produce the claimed method. *In re Brouwer*, 37 U.S.P.Q.2d 1663, 1666 (Fed. Cir. 1995). The examiner cannot point to a teaching or suggestion in *Chen* that would motivate a person of ordinary skill in the art to modify *Suppes* to in the manner suggested by the examiner.

Suppes is directed to the evaluation of "cetane number, viscosity, cloud-point, and pour-point properties of **syncrude** and blends of syncrude with blend stocks such as ethanol and diethyl ether." *Suppes*, abstract at 2029 (emphasis added). According to *Suppes* "blends comprised primarily of syncrude are **potentially good CI [Compression-Ignition] fuels**, with pour-point temperature

depression being the largest development obstacle." *Id.* *Suppes* states that "fuels based on >70% Fischer-Tropsch syncrude ... would fill an important niche in the EPACT [U.S. Environmental Policy Act] fuel menu, namely, an affordable **liquid fuel that can be used in *conventional diesel engines***" that "generally have high cetane numbers (>65) and near-zero aromatic contents," *Suppes* (column 2, second full paragraph at page 2031, emphasis added).

The examiner has not pointed to any teaching or suggestion in the cited references references to use a **diesel fuel** to "perform[] one or more procedure selected from the group consisting of heating water with the flue gasses by indirect heat exchange in a boiler and directly heating a space with the flue gasses." Nor has the examiner pointed to a teaching or suggestion in *Suppes* of a method comprising "providing a blue flame burner adapted for domestic heating with fuel comprising a Fischer Tropsch derived fuel." Claim 1.

The examiner has not pointed to teaching or suggestion in *Chen* that would motivate a person of ordinary skill in the art to modify *Suppes* in the manner required to produce the claimed combination. The examiner argues that that *Chen* "disclos[es] a process for using or burning middle distillate Fischer-Tropsch derived fuel . . . as 'home heating oil,'" Office action, p. 5, citing *Chen*, col. 10, ll. 16-34. The examiner takes "Official Notice" that "it is well known to burn 'home heating oil' in combustion apparatus associated with boiler apparatus for heating homes. The combustion apparatus in these home heaters [is] known to be of the type which produc[e] blue flames." Office Action, p. 5.

The Examiner cites *no reference(s)* to support this assertion. The Examiner apparently makes the assertion based on personal knowledge. However, no supporting affidavit has been made of record. Under 37 C.F.R. § 1.104(d)(2)(emphasis added):

> (2) When a rejection in an application is based on facts within the personal knowledge of an employee of the Office, the data shall be as specific as possible, and the reference *must* be supported, when called for by the applicant, by the *affidavit* of such employee, and such affidavit shall be subject to contradiction or explanation by the affidavits of the applicant and other persons.

Applicant respectfully requests the Examiner to either (1) cite a reference in support of the foregoing assertion or, in the alternative, (2) provide a Rule 104(d)(2) affidavit providing any supporting facts within the personal knowledge of the Examiner, as also set forth in M.P.E.P. § 2144.03.

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In any event, the examiner has not pointed to a teaching or suggestion in *Chen* of "a process for using or burning middle distillate Fischer-Tropsch derived fuel . . . as 'home heating oil," as the examiner contends. Office action, p. 5, citing *Chen*, col. 10, ll. 16-34. The cited portion of *Chen* merely states that the middle distillate fraction in *Chen's* "integrated refining process" is "generally low in sulfur and generally meets product specifications for use as a light fuel oil, e.g., home heating oil." *Chen*, col. 10, ll. 16-34. The foregoing simply is not a teaching or suggestion of "a process for using or burning middle distillate Fischer-Tropsch derived fuel . . . as 'home heating oil." Office action, p. 5. In fact, columns earlier, *Chen* explains that "[t]**he feedstocks** which are employed in the present process may be generally characterized as high boiling point feeds ***of petroleum origin.***" *Chen*, col. 6, ll. 16-26, emphasis added.

Chen does make a general statement in this far earlier section that "feeds from synthetic oil production processes such as Fischer-Tropsch synthesis or other synthetic processes" may be employed in his "integrated refining process." *Id.* However, this general teaching in Chen is not a specific teaching or suggestion to produce "home heating oil" from a Fischer-Tropsch derived fuel. The "middle distillate fraction" is only one of the fractions produced by *Chen's* "integrated refining scheme," and "home heating oil" is only one of the many products that may be made using Chen's "integrated refining scheme."

At most, the examiner has merely identified individual components of the claimed invention in a single reference and identified "prior art statements that in the abstract appear[ed] to suggest" using a Fischer-Tropsch derived feedstock to produce a home heating oil. Such a showing does not support a case of *prima facie* obviousness. *In re Kotzab*, 55 U.S.P.Q.2d 1313, 1317-1318 (Fed. Cir. 2000). "[A] rejection cannot be predicated on the mere identification of individual components of claimed limitations. Rather, particular findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed." *Id.* at 1317. The examiner has not made the required particular findings, and has not established a case of *prima facie* obviousness of claim 1 over *Suppes* in view of *Chen*.

The rejection also fails to consider the invention as a whole. "Failure to consider the claimed invention as a whole is an error of law." *Jones v. Hardy*, 220 U.S.P.Q. 1021, 1025

(Fed. Cir. 1984). One aspect of the invention "as a whole" is the recognition that a problem exists, and that the problem needs to be solved. *Jones v. Hardy*, 220 U.S.P.Q. at 1026. The rejection "ignores the problem-recognition element, and injects an improper 'obvious to try' consideration." *Jones v. Hardy*, 220 U.S.P.Q. at 1026.

The specification explains that "[b]lue flame burners are known to have low NO_x emissions. Nevertheless, there is a need for even lower NO_x emissions. Especially, **the NO_x emissions when petroleum derived fuels, such as gas oil or kerosene is used are sometimes too high.**" US 2005/0255416 ¶ [005], emphasis added. Using the claimed method:

> the low NO_x emissions of a blue flame burner can be even further reduced when a Fischer-Tropsch-derived fuel is used. An even further advantage is that the carbon monoxide emission is reduced. A next advantage is that less odor during start and extinction of the blue flame burner has been observed when using this fuel. This is very advantageous, especially when such a burner is used in a domestic environment.

US 2005/0255416 ¶ [008]. See also Example 1 and Figures 1 and 2: "[i]t is clear that the NO_x emissions are lower for the Fischer-Tropsch derived fuels as compared to when a normal gas oil or an ultra low sulphur gas oil is used." US 2005/0255416 ¶ [008].

The examiner has not pointed to a teaching or suggestion of the foregoing problem in the cited references. Nor has the examiner pointed a teaching or suggestion that the process of claim 1, and the other pending claims, could reduce emission of NO_x and/or carbon monoxide when operating a blue-flame burner. The examiner certainly has not pointed to a teaching that the process of claim 1, and the other pending claims, could (a) "produce an amount of energy and flue gasses comprising a reduced quantity of NO_x compared to the quantity of NO_x produced burning a non-Fischer-Tropsch-derived fuel under the same conditions" (claim 20) or produce "flue gasses comprise a reduced quantity of carbon monoxide compared to the quantity of carbon monoxide produced burning a non-Fischer-Tropsch-derived fuel under the same conditions." Claim 21.

Applicant respectfully requests that the rejection over *Suppes* in view of *Chen* be withdrawn with respect to claim 1 and claims depending therefrom, and that all of the pending claims be allowed.

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DOUBLE PATENTING REJECTIONS

Claims 1-13 are provisionally rejected on the grounds of non-statutory obviousness-type double patenting as unpatentable over (1) claims 1-17 of co-pending USSN 10/521,517, (2) claims 1-11 of co-pending USSN 10/521,700, and (3) claims 1-11 of co-pending USSN 10/521,378. While Applicants respectfully disagree that claims 1-13 are unpatentable over the respective claims of the co-pending patent applications, one or more *Terminal Disclaimers*, in compliance with **37 C.F.R. § 1.321(c)**, will be filed upon indication of allowable subject matter.

NEW CLAIMS

Applicants have added new claims 14-22. No new matter has been added. The new claims further distinguish over the references of record, and are believed to be allowable. For at least all of the foregoing reasons, Applicants respectfully request consideration and allowance of new claims 14-22.

CONCLUSION

For all of the foregoing reasons, Applicants submit that the application is in a condition for allowance. If the examiner finds the application other than in condition for allowance, the examiner is requested to call the undersigned attorney at the Houston, Texas telephone number (713) 334-5151 x 200 to discuss the steps necessary for placing the application in condition for allowance. The Commissioner is hereby authorized to charge any fees in connection with this paper, or to credit any overpayment, to Deposit Account No. **19-1800 (File No. TS8580)**, maintained by Shell Oil Company.

Respectfully submitted,

Dated: January 22, 2007

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